


RESEARCH ARTICLE

Who beats their partner, and who beats their schoolmates? A comparison of teen dating and school physical violence perpetration in Lower Saxony, Germany

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Abstract

Teen dating violence (TDV) and school violence (SV) are two major social problems in adolescence. Until recently, the antecedents of both TDV and SV have been analyzed largely independently of each other. This study analyses and compares the determinants of both TDV and SV, with a focus on physical violence. Based on a comprehensive survey of ninth-grade adolescents at the average age of 15 years ($N = 3,800$) conducted in the German federal state of Lower Saxony, the findings showed that there is a significant but low correlation between both physical TDV and SV ($r = 0.21$). Concerning the determinants, we found that males carry out physical SV significantly more often, but physical TDV significantly less often than female respondents. Acquaintance with violent friends shows a stronger correlation with SV but not with TDV. Low self-control and violent media consumption are determinants of both TDV and SV. Empathy as a protective factor and parental violence as another risk factor were found to be only weak and sometimes not significantly correlated with both TDV and SV.

KEYWORDS

adolescents, school violence, structural equation modeling, survey, teen dating violence

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1 | INTRODUCTION

Aggressive behavior, especially physical violence, is a significant social problem in adolescence. Since young people spend a lot of time at school, violence occurs in this context, among others. It is therefore not surprising that the prevalence and antecedents of school violence (SV) have been studied extensively for decades (e.g., Olweus, 1993). However, violent behavior is not only carried out at school. As adolescents grow older and start to date, there are also new opportunities for violence in intimate relationships. In addition to psychological violence (such as threatening behavior, insulting), this also includes physical and sexual transgressions. Such behaviors are conceptualized as teen dating violence (TDV), a phenomenon that has increasingly become the focus of empirical research since the beginning of the new millennium (Offenhauer & Buchalter, 2011). The present study aims to examine the relationship between these two forms of violence as well as the determinants based on a comprehensive youth survey from Germany. The analysis is limited to physical violence only, because this was measured in the study in a largely comparable manner regarding SV and TDV.

1.1 | Research on TDV

Concerning research on TDV, previous study findings have been inconsistent about its prevalence. In a meta-analysis of 101 individual studies on 13- to 18-year-old adolescents, an average prevalence rate of 20% for physical TDV was reported (Wincentak et al., 2017); for Germany, the rate of physical TDV is 9.4% according to Kliem et al. (2018). However, rates of physical violence varied between 1 to 61% in the studies analyzed by Wincentak et al. (2017). The meta-analysis also revealed gender differences in physical violence perpetration: the rate for boys was 13%, for girls 25%. Contrary to numerous findings on physical violence in general (e.g., Björkqvist, 2018; Junger-Tas et al., 2004), regarding TDV, it is shown that female youth are more often perpetrators than male youths (Wincentak et al., 2017).

Regarding the determinants of TDV perpetration, many studies have identified several risk factors. In their review, Vegi et al. (2013) included 20 longitudinal studies conducted in the United States and Canada. They identified a total of 53 risk factors for TDV including “the use of aggressive media,” “childhood physical abuse,” “harsh parenting practices,” and “involvement with antisocial peers.” Additionally, Giordano et al. (2015) study found that attending a school where partner violence is frequent, parental violence and friends’ use of violence increase the risk of TDV perpetration (see also Beckmann et al., 2019). In other studies, family factors, such as childhood maltreatment (Cohen et al., 2018; Li et al., 2020) and peer factors including peer dating violence and peers’ aggressive and antisocial behaviors (Garthe et al., 2017), show positive associations with TDV perpetration. The study by Friedlander et al. (2013) also confirmed a risk-increasing influence of aggressive media usage on TDV. In contrast, only a handful of studies have examined protective factors that decrease the risk of TDV. One is a study by Espelage et al. (2019), which examined the protective role of empathy. The study found that empathy was a salient protective factor for preventing TDV. Additional research is needed to identify protective factors that are likely to reduce the risk of TDV.

1.2 | Research on SV

SV is also a widespread problem among adolescents. SV can be considered synonymous with the term school bullying, although only physical forms of SV or bullying are

considered here. Physical SV includes assaults that can damage the physical integrity of the victim, such as hitting, kicking, using weapons, etc. The frequency of the behavior, the status of the perpetrator, etc. are not relevant. In a representative survey of approximately 45,000 adolescents in Germany, for example, Baier et al. (2009) found that 24.2% of the adolescents in their sample had purposely hit or kicked another student in the last 6 months of school, and 3.0% did so at least several times a month. The study also found that male adolescents are significantly more likely to engage in physical violence in school than their female counterparts, which was consistent with other studies (see Álvarez-García et al., 2015, for a review). Gázquez et al. (2015) meta-analytic review of research also showed that personality traits, such as impulsivity, low self-esteem, and low level of empathy were positively related to SV, which was consistent with Álvarez-García et al. (2015) systematic review. Additionally, Chui and Chan (2015) also analyzed the influence of self-control on school bullying perpetration. Using a sample of male adolescents from Macau, they found that low self-control (especially risk-seeking behavior, self-centeredness, and volatile temper) increased both bullying behavior and the tendency to fight in school. On the other hand, the role of empathy has also been considered in research on SV. In their meta-analysis on bullying, which includes 49 individual studies, Zych et al. (2019) examined the influence of empathy. In a total of 19 out of 27 studies, a significant protective influence of affective empathy was found (average OR = 0.51), in ten out of 18 studies a significant protective influence of cognitive empathy (OR = 0.60).

In addition to the personal characteristics, such as gender, personality traits, low self-control, and empathy, studies have also identified contextual factors such as exposure to parental violence, family conflict, prior involvement in bullying, and having friends who bully others or engage in delinquent and antisocial tendencies have been shown to increase the risk of engaging in school bullying perpetration (Álvarez-García et al., 2015; Grant et al., 2019; Hemphill et al., 2012; Holt et al., 2009; Lebrun-Harris et al., 2019). For instance, a recent longitudinal study consisting of a sample of 1,194 5th, 6th, and 7th-grade students in U.S. middle schools found a positive main effect for both family violence and peer deviance on levels of school bullying perpetration (Grant et al., 2019). Other studies have also found that parental violent behavior is a significant predictor of SV or TDV (e.g., Davis et al., 2020; Giordano et al., 2015), so this study is limited to this form of parenting, although other parenting styles would certainly be important to analyze as well. Because family and peers are likely to influence adolescent's behavior in general, it is not surprising that substantial empirical evidence suggests that various family-level and peer-level correlates are positively related to SV perpetration (Holt et al., 2009).

Several studies have also analyzed the relationships between media consumption and adolescent violent behavior. Olson et al. (2009), for example, report that the consumption of M-rated videogames (= Mature, suitable from 17 years) increases bullying behavior. Other studies also provide evidence of this relationship (Barlett et al., 2019; Teng et al., 2020).

1.3 | The linkage between TDV and SV

Concerning the relationship between TDV and SV, empirical studies have shown that TDV is correlated with school bullying perpetration. A meta-analysis by Zych et al. (2021), which included 23 empirical studies, shows that bullying perpetration and TDV perpetration correlate significantly with each other; this correlation also remains when controlling for other factors (OR = 1.98; after adjusting for covariates OR = 1.29). Also, several studies have documented that SV is a significant predictor of TDV (Cutbush et al., 2016; Foshee et al., 2014; Walters & Espelage, 2018). As Zych et al. (2021, p. 398) state, it seems reasonable to assume

a relationship between SV and TDV: “early romantic relationships generally emerge in the broader context of adolescent peer relationships. Thus, behaviors acquired and established within the peer group can be easily transferred to the new context of intimate relationships.” Behavior learned at school among peers can in this respect also be applied in the context of a partnership (e.g., Malik et al., 1997).

Further, a limited number of studies showed that both TDV and SV share similar risk factors. For instance, findings from Foshee et al. (2016) study showed that antecedents, such as adolescent acceptance of sexual violence, a conflict between mother and adolescent, low monitoring by mothers, low closeness between mother and adolescents, low family cohesion, depressive symptoms, anger, and anger reactivity were shared across TDV, school bullying perpetration, and sexual harassment.

1.4 | The current study

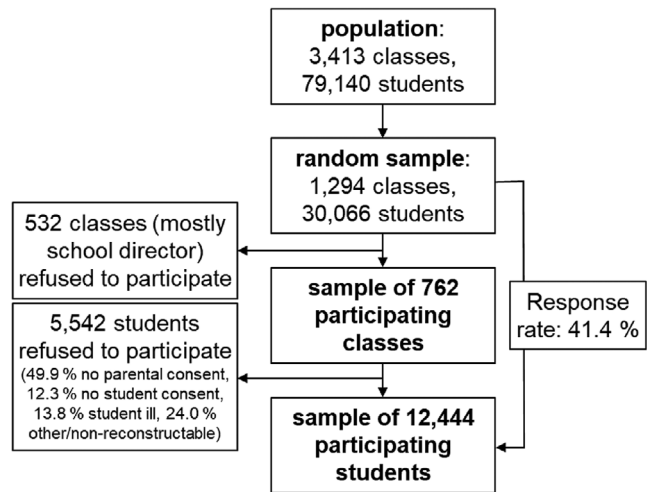
There is a paucity of studies that comparatively address factors correlating with SV and TDV. The study presented here compares correlates of both TDV and SV, with a focus on physical violence, using a representative sample of adolescents from Germany. A range of different variables is taken into account. Based on the research presented, the following hypotheses will be tested:

- Physical TDV perpetration and physical SV perpetration would correlate positively with each other.
- Male respondents are less likely to perpetrate physical TDV but more likely to perpetrate physical SV.
- A high level of self-control and a high level of empathy would be negatively associated with physical TDV and physical SV perpetration.
- Contextual factors such as experience parental violence themselves, having violent friends themselves, and own violent media exposure would be positively associated with physical TDV and SV perpetration.

2 | METHOD

2.1 | Sample

The analyses for the current study are conducted from representative survey data of ninth graders at the average age of 15 years in Lower Saxony, Germany, who were interviewed in writing in the spring of 2019 (Krieg et al., 2020). Lower Saxony is one of 16 German federal states, which consists of about eight million residents. TDV, as well as SV, are major problems in Germany and Lower Saxony (e.g., Kliem et al., 2018; Krieg et al., 2020). Young people in the ninth grade were the focus of the study because delinquent or deviant behavior occurs most frequently among this age group according to the age-crime curve (Moffitt, 1993). From all 3,413 ninth-grade classes (from about 1,000 schools) in Lower Saxony (in the 2018/2019 school year) a random sample (stratified by school types) was drawn (see Figure 1). A total of 1,294 school classes with 30,066 students were included in the study sample. In 532 classes, the school directors or class teachers refused to participate in the survey. In the 762 participating classes, 5,542 students could not be included in the survey (see Figure 1). In total, 12,444 students took part in the survey, which corresponds to a response rate of 41.4%. However, the response rate is 69.2% when calculated in

FIGURE 1 Response rate

relation to the 762 participating classes. The ninth graders were administered a survey, which was initially designed as a self-reported delinquency study that primarily measures factors associated with delinquent victimization and perpetration.

At the beginning of the survey, the study participants were informed that participation in the study was voluntary, that the answers would be anonymous. They were also informed that the survey could be stopped at any time, that individual questions could remain unanswered. The 90-min survey was supervised by trained staff and was conducted online or in a written form in the classroom in the presence of the teacher. Before each survey, the name of the school's liaison teacher was asked, and the teacher's name and the contact information for the telephone counseling service were written on the board. The study has been approved by the Lower Saxony State Education Authority as well as by the Lower Saxony Ministry of Education and Cultural Affairs. The parents of the adolescents as well as the adolescents themselves were informed about the study by means of a one-page letter on which the main contents of the survey was listed. The parents were asked to provide their written consent to their child's participation. In addition, on the day of the survey, the youth were explicitly asked if they want to participate in the survey; those who did not were kept busy with school-related tasks during the survey.

The sample of 12,444 students, which was weighted due to minor differences in the type of school attended, was as follows: 49.0% were female; the average age was 15.05 years (between 13 and 19 years), 31.1% were from migrant families (i.e., they or at least one parent were not born in Germany or do not have German citizenship), and 34.7% attended the Gymnasium—the highest school level in Germany. However, the following analyses do not take the total sample into account. Only respondents who first stated that they ever had a boyfriend/girlfriend were considered ($n = 6,656$), those who reported that they had a boyfriend/girlfriend in the past 12 months ($n = 4,228$), and those who answered all the questions were included in the analyses. This resulted in a total of 3,800 respondents (unweighted data). This sub-sample consists of the following: 56.0% were female, the average age was 15.11 years ($SD = 0.692$), 30.1% were from migrant families, and 30.3% attended the Gymnasium. The sub-sample differs from the total sample mainly concerning gender. In the sub-sample, the proportion of female respondents is higher.

2.2 | Measures

The two dependent variables of the analysis are TDV perpetration and SV perpetration. Only physical forms of violence are considered in this study.

2.2.1 | Physical TDV perpetration

Three items were used to measure TDV (Wolfe et al., 2001). The adolescents were asked to indicate on a scale from *never* (0) to *often (6 times or more)* (3) how often they had exhibited the following behaviors toward their romantic partner in the last 12 months: pushed, shoved, or shook her/him; kicked, punched or hit her/him; slapped her/him or pulled her/his hair. The reliability coefficient was $\alpha = 0.67$. The response option was dichotomized as *not a perpetrator* (0) and *perpetrator of TDV* (1). Therefore, if students reported performing at least one behavior at least (1) *one to two times*, they are categorized as perpetrators. The variable was dichotomized because the distribution is highly skewed, that is, only few students performed TDV (see below).

2.2.2 | Physical SV perpetration

SV was measured with only one item. The young people were asked to indicate on a scale from *never* (0) to *often (several times a week)* (5) how often they had hit or kicked another student in the last school year. Similar to TDV, the response options were dichotomized as *not a perpetrator* (0) and *perpetrator of SV* (1). Students are perpetrators of SV if they have committed physical violence at least (1) *once or twice*.

A total of six independent variables are included in the analyses.

2.2.3 | Male gender

Gender was measured via the question, "What is your gender?" with the response options: *female* (0), *male* (1) and *diverse* (2) while students who selected diverse were deleted from the sample due to low cell occupancy ($n = 30$).

2.2.4 | Low self-control (risk-seeking)

Low self-control was operationalized via a short four-item scale measuring risk-seeking (cf. Baier, 2014; Grasmick et al., 1993): "I enjoy taking risks because it's fun," "I like to test myself every now and then by doing something a little risky," "I sometimes find it exciting to do things for which I might get in trouble," and "Excitement and adventure are more important to me than security" with a response option: *totally disagree* (1) to *totally agree* (4). The reliability coefficient was $\alpha = 0.85$.

2.2.5 | Empathy

This variable was measured by a four-item short scale, such as "I often feel compassion for people who are worse off than me" with response options: *totally disagree* (1) to *totally agree* (4).

agree (4) (cf. Stadler et al., 2004). The reliability coefficient was $\alpha = 0.80$. For the risk-seeking (low self-control) and empathy variables, a mean scale was calculated in each case.

2.2.6 | Severe parental violence against respondent

Experience of severe parental violence by the respondent itself was measured with the study participants' rating of the following incidents that had occurred within the last 12 months by their mother and father separately (Straus et al., 1996): hit me with an object, hit me with a fist or kicked me, and beaten me up. Only these three severe forms of parental violence are considered here because they include physical violence and it seems reasonable to examine the consequences for other forms of physical violence (SV and TDV). The survey also asked about other forms of parenting such as psychological violence (e.g., insulting me); however, these are not considered here. Violent behavior between parents was captured by only one item in the survey ("I have seen my parents hit each other"), so there is no reliable measure on this variable and it is not included in the analyses. Response options were *never* (1) to *several times a week* (6). The reliability coefficient was $\alpha = 0.87$.

2.2.7 | Having violent friends

Acquaintance with violent friends was measured with two items. The study participants were asked to indicate how many friends they knew who had "taken something from someone violently" or "hit and hurt someone else" in the last 12 months. The relationship with friends was not further specified in the questionnaire, that is, it was actually only asked whether one has friends who have carried out violent behavior. How often they see the friends or spend time with them was not asked. Few other forms of delinquent behavior by friends were asked (shoplifting, school absentism), which are not considered appropriate for the question studied here. Response options were *0 friends* (1) to *over ten friends* (6). The reliability coefficient was $\alpha = 0.73$.

2.2.8 | Violent media consumption

This variable was measured by asking the study participants to estimate how often they did the following in the last 12 months: watched horror films or other films (thriller, action); played computer or video games (e.g., first-person shooter, third-person shooter); watched videos with extreme violence (e.g., a real murder, real execution) on the internet/cell phone. The response options were *never* (1) to *daily* (7). The reliability coefficient was $\alpha = 0.68$. Severe parental violence, having violent friends and violent media consumption were formed as maximum value indices—i.e., the highest value of the items was included in the index. The variables were used in the analyses as continuous variables, that is, no thresholds were defined as to when severe parental violence, violent media use, etc. are present.

2.3 | Analytic techniques

In the first step, univariate and bivariate (correlational) analyses were conducted using SPSS (v. 27). A multivariate analysis was performed in a second step by using logistic

multilevel regression modeling using MPlus 7.31 (Muthén & Muthén, 2015). Multilevel modeling was necessary because the respondents were surveyed in their classrooms. The independence of the responses of individual students can therefore not be assumed, which must be taken into account when calculating standard errors. Using the WLSMV estimator recommended by Muthén and Muthén (2015), the logistic multilevel model, as well as all univariate and bivariate analyses were conducted for 3,800 students with complete information on all study variables (in 720 classes). Only the variables at the student level, not the class level, were included in the analysis.

3 | RESULTS

3.1 | Prevalence of TDV and SV

Of all adolescents included in the analysis, 12.7% stated that they had carried out physical TDV at least once in the past 12 months. Among the female respondents, the prevalence was 17.5%, and among the male respondents it was 6.5% ($X^2 = 103.764$, $p < 0.001$). Concerning the item “pushed, shoved or shook her/him,” the prevalence was slightly higher for females (6.8% vs. 4.1%). For the item “kicked, punched or hit her/him,” the prevalence rates were 8.2% for females and 2.2% for males. For the item, “slapped her/him or pulled her/his hair,” the prevalence was 10.1% for females versus 2.6% for males. Physical SV was carried out by 11.8% of the respondents. For the female respondents, the prevalence rate was 5.2%, whereas it was 20.3% for males ($X^2 = 206.282$, $p < 0.001$).

The correlation between the two dichotomous violence variables was $\phi = 0.069$ ($p < 0.001$). For the female respondents, the correlation was $\phi = 0.144$ ($p < 0.001$), and for the male respondents $\phi = 0.109$ ($p < 0.001$). When all respondents were considered, 77.7% engaged in neither physical TDV nor physical SV, whereas 2.2% engaged in both violent behaviors. Approximately the same number of the respondents only perpetrated physical TDV (10.4%) or only SV (9.6%).

3.2 | Descriptive statistics

Descriptive findings on the independent variables can be found in Table 1. The mean for the variable low self-control (risk-seeking) was 2.31, which shows that the majority has high self-control (or low risk-seeking). In contrast, the mean for empathy was 3.14 among the

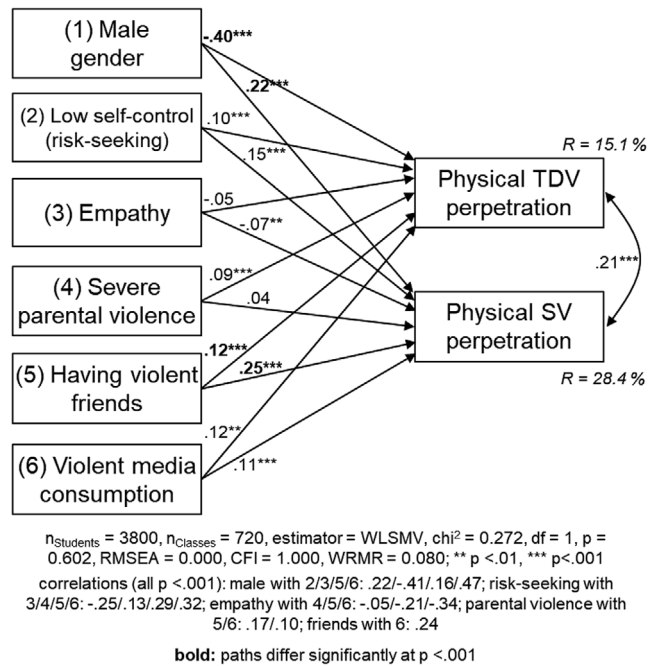
TABLE 1 Descriptive statistics and correlations

Variable	Range	<i>M</i>	<i>SD</i>	1	2	3	4	5
1 Male gender	0/1	0.44	0.50	–	–	–	–	–
2 Low self-control (risk-seeking)	1–4	2.31	0.78	0.22***	–	–	–	–
3 Empathy	1–4	3.14	0.67	–0.41***	–0.25***	–	–	–
4 Severe parental violence	1–6	1.31	0.86	0.01	0.13***	–0.05**	–	–
5 Having violent friends	1–6	1.78	1.22	0.16***	0.29***	–0.21***	0.17***	–
6 Violent media consumption	1–7	3.97	2.03	0.47***	0.32***	–0.34***	0.10***	0.24***

** $p < 0.01$.

*** $p < 0.001$.

FIGURE 2 Logistic multilevel regression analyses



respondents. Regarding severe parental violence, the mean is 1.31 and rather low (only a minority experienced severe parental violence). The mean for having violent friends (1.78) was higher and was thus more frequent than the experience of severe parental violence. The mean for violent media consumption (3.97) was close to the theoretical mean; playing violent computer games or seeing violent scenes in films/on the internet was therefore quite frequent.

Except for gender and the experience of severe parental violence, all correlations shown in Table 1 were significant. The strongest correlation was found between male gender and the consumption of violent media ($r = 0.47$). Male respondents consumed violent media significantly more frequently than female respondents. Furthermore, male respondents showed a lower self-control (stronger risk-seeking) and a lower empathy, and they had more contact with violent friends. Low self-control (risk-seeking) was correlated with lower empathy, experiencing severe parental violence, having contact with violent friends, and violent media consumption. Empathy, on the other hand, was correlated with less frequent parental use of severe violence, fewer violent friends, and less violent media consumption. Experiencing severe parental violence was associated with more frequent contact with violent friends and more frequent violent media consumption. Moreover, having violent friends and violent media consumption correlated positively with each other.

3.3 | Prediction of TDV and SV

Figure 2 shows the results of the logistic multilevel regression model. The model achieved very good fit values for $X^2 = 0.272$, RMSEA = 0.000, and CFI = 1.000. The theoretical model and the empirical data matched to a high degree. Physical TDV and physical SV correlated at 0.21 which confirmed hypothesis 1.

Hypothesis 2 was also confirmed. We found that male respondents are significantly less likely than female respondents to report having carried out physical TDV ($\beta = -0.40$); male

respondents, on the other hand, have perpetrated physical SV significantly more often than female respondents ($\beta = 0.22$). The difference between the two coefficients was also significant. This was determined through a model comparison. In addition to the estimated model in Figure 2, a model was estimated in which the gender paths were equated. This model achieved a significantly worse fit value ($X^2 = 146.084$, $df = 2$). Thus, gender showed a significantly different correlation with TDV and SV.

Hypothesis 3 proposes that higher self-control and higher empathy are protective factors for both TDV and SV. For self-control, this was confirmed. That is, the higher the risk-seeking, the more often TDV and SV were carried out. The correlation with SV was slightly higher ($\beta = 0.15$) than the correlation with TDV ($\beta = 0.10$). However, the difference between the two paths was not significant, and the equated model did not show a significantly worse fit value ($X^2 = 1.555$, $df = 2$). In contrast, high empathy was only found to be a significant protective factor for SV, and no significant correlation emerged for TDV. However, the correlation with SV can also be classified as negligible ($\beta = -0.07$). Empathy is therefore not significantly associated with violent behavior. The model comparison with equated paths did not achieve a worse model fit ($X^2 = 0.547$, $df = 2$) so that it cannot be concluded that the influence of empathy differed between the two dependent variables.

Hypothesis 4 is also not fully confirmed by the study findings. Having violent friends significantly increased physical TDV and SV. Significant correlations were also found for violent media consumption. However, severe parental violence was only slightly related to physical TDV ($\beta = 0.09$) but not with SV ($\beta = 0.04$). Parental violence is therefore not an independent explanatory factor for SV and also a weak explanatory factor for TDV. The paths of severe parental violence on the two dependent variables did not differ significantly ($X^2 = 2.649$, $df = 2$); same goes with paths of violent media consumption ($X^2 = 0.467$, $df = 2$). Interestingly, however, the influence of having violent friends differed significantly. The influence of violent friends was significantly stronger for SV than for TDV. The model fit in which both paths are equated was significantly worse than the model fit of the initial model ($X^2 = 12.587$, $df = 2$).

Finally, it is important to discuss the variances explained. SV was better explained (28.4% of the variance) than TDV (15.1% of the variance) based on the variables taken into account. Further influencing factors need to be taken into account for a better explanation of the variance, especially for the TDV.

4 | DISCUSSION

In the present study, the prevalence and the determinants of physical TDV and physical SV were analyzed. A comprehensive survey of 15-year-old German adolescents was used. A total of 3,800 respondents were included in the analyses. These initially revealed a comparable prevalence rate for both physical TDV and physical SV: 12.7% of the adolescents who had an intimate partner in the past 12 months were engaged in physical TDV, 11.8% were engaged in physical SV. Prevalence rates are somewhat lower than in studies from other countries.

Based on existing studies (Cutbush et al., 2016; Foshee et al., 2014, 2016; Walters & Espelage, 2018; Zych et al., 2021), we proposed that TDV and SV correlate significantly with each other, which was somewhat confirmed in the analyses. However, the correlation between the two forms of violence was not very strong. This is also confirmed by another analysis: 2.2% of all respondents had engaged in both forms of violence, whereas about 10% had engaged in only one. This finding is somewhat contrary to the mentioned study findings, which show a stronger correlation between TDV and SV. Possibly, adolescents who

perpetrate violence against their intimate partners may not necessarily perpetrate violence against their classmates. It should be noted, however, that younger adolescents were considered, whose intimate relationships may still have had a rather short duration on average.

The present study findings are consistent with the proposed hypothesis and previous findings of meta-analyses regarding the influence of gender (Álvarez-García et al., 2015; Wincentak et al., 2017). Female adolescents in our sample are shown to be more violent in partnerships than male adolescents. In contrast, male respondents are found to display more violent behavior in schools. Female adolescents may be more likely to display violence at least in heterosexual dating relationships because males are socially conditioned to not perpetrate violence against females at least in the age group studied. It cannot be analyzed to what extent the behavior of female adolescents is a reaction to aggressive (but not physically violent) behavior of male partners.

The hypotheses regarding the determinants of TDV and SV are not completely confirmed. Firstly, our study findings indicated that low self-control, contact with violent friends, and violent media consumption are significant risk factors for both types of violence. This confirms mentioned findings and highlights the importance of understanding how self-control, delinquent peer association, and exposure to violence in the media might be associated with violent behaviors. However, the protective role of a high level of empathy could not be proven in the study, although it was somewhat correlated with SV. This finding was contrary to Zych et al. (2019) study, which showed that affective empathy was a significant predictor of TDV. As the bivariate analyses of the present study showed, however, significant correlations were found between empathy, self-control, and violent media consumption. Empathy could thus represent a kind of distal factor that has a mediated effect on violent behavior via the other factors. Such mediations should be empirically tested in future research. Additionally, results from our study also show a weak correlation between exposure to severe forms of parental violence and TDV. Our study also found that exposure to severe forms of parental violence was not correlated with SV. Childhood experiences, such as exposure to parental violence may be less significant for adolescents as adolescents tend to spend less time with their family and more time with their peers. However, for behavior in intimate partnership, experiences of parental violence are somewhat more significant (possibly in terms of role model behavior) than for SV.

Finally, having violent friends was more strongly correlated with SV than with TDV. It is conceivable that violence in intimate partner relationships is influenced by factors other than relationships with peers. Our findings also showed that SV is more strongly influenced by the determinants analyzed in our study than TDV, which suggests that the determinants of TDV may be different from those of SV and warrant further investigation.

4.1 | Limitations and conclusion

Beyond the large number of cases and the representative character of the present study, several limitations restrict the significance of the analyses presented. The study relied on a cross-sectional survey that does not allow for causal inferences. The school class-based survey also has a below-average response rate, which likely affected the results of the study. Moreover, violent behaviors measured in our study were based on adolescent self-reports. It would be important to gather data from classmates or intimate partners, which would increase the reliability of our findings. As the lower explained variance of TDV shows, the determinants are only partially suitable for explaining TDV. Future studies should therefore include other relevant factors, such as those relating to dating partnerships and dating

violence. Another limitation is the reliance on single-item indicators and only physical forms of violence were considered. And finally, the sample only consisted of ninth graders, and it is important to consider other age groups who are likely to be at risk of TDV and SV. That being said, researchers are strongly encouraged to build on the present study findings with a longitudinal study design and more robust measures, which would have major implications for future research and practice.

4.2 | Implications for prevention

The study showed that SV and TDV are related to some extent. Thus, a first implication for prevention is that the relationship between both forms of violence must be considered. The phenomena should not be seen as isolated; school-violent adolescents have an increased risk of committing violence in intimate partnerships as well. In most cases, behavior in partnerships is likely to be less observable than violent behavior in the school setting. If adolescents commit physical SV, a possible intervention should also clarify the extent to which these adolescents are also conspicuous for violence in other contexts. A second implication concerns the identified risk and protective factors. Although these factors differ in terms of the strength of their influence, the findings are comparable in terms of their direction. This means that prevention work should focus on teaching self-control skills, preventing the establishment of delinquent groups of friends and reducing violent media consumption in order to prevent both forms of violence. Empathy training and influencing parenting styles, on the other hand, do not represent preferred preventive measures in the age group considered here. Third, gender-sensitive prevention work appears to be important. Although no gender-differentiated analyses of risk and protective factors were carried out here, which should be done systematically in future studies, it is evident that male adolescents are more likely to engage in aggressive behavior in the school context, while female adolescents are more likely to do so in partnerships. In this respect, the overlap between the two behaviors ultimately proves to be limited. In the future, prevention measures against TDV must take even greater account of the motives and causes that lead girls to use violence in partnerships, and of the motives and causes that lead boys to use violence in schools.

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CONFLICT OF INTEREST

No authors report any conflicts of interest associated with this study. The views and opinions expressed in this article are those of the authors only.

ETHICS STATEMENT

The study has been approved by the Lower Saxony State Education Authority as well as by the Lower Saxony Ministry of Education and Cultural Affairs. The parents of the adolescents were informed about the study and asked to provide their written consent to their child's participation. The study participants were informed that participation in the study was voluntary and that the answers would be anonymous. They were also informed that the survey could be stopped at any time, that individual questions could remain unanswered.

AUTHOR CONTRIBUTIONS

SK and YK conceived and designed the study. DB and SK analyzed the data. DB and JSH drafted the manuscript. All authors contributed to the interpretation of results and editing of the manuscript. All authors read and approved the final manuscript.

DATA AVAILABILITY STATEMENT

The data are currently not publicly available. However, they will be published on a repository when the paper is published.

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